

In the Claims

1. (Currently Amended) An isolated and purified protein constituting a mammalian neuronal cationic ASIC channel that is sensitive to amiloride and activated by protons, wherein the amino acid sequence is selected from the group consisting of SEQ ID NO: 2, SEQ ID NO: 4, AND SEQ ID NO: 8, ~~or a functionally equivalent derivative thereof having at least 67% homology to SEQ ID NO: 2, 4 or 8.~~

2.-10. (Canceled)

11. (Previously Presented) A nucleic acid molecule comprising a nucleic sequence coding for the protein constituting a cationic channel according to claim 1.

12. (Previously Presented) The nucleic acid molecule according to claim 11, comprising the nucleic sequence bounded by nucleotides 123 and 1700 of the sequence represented in SEQ ID NO: 1.

13. (Previously Presented) The nucleic acid molecule according to claim 11, comprising the nucleic sequence bounded by nucleotides 1 and 1542 of SEQ ID NO: 3.

14. (Canceled)

15. (Previously Presented) The nucleic acid molecule according to claim 11, comprising the nucleic sequence bounded by nucleotides 109 and 1785 of SEQ ID NO: 7.

16. (Canceled)

17. (Previously Presented) A vector comprising at least one nucleic acid molecule according to claim 11, combined with control sequences.

18. (Previously Presented) A method for producing a protein according to claim 1 comprising:

- transferring a nucleic acid molecule comprising a nucleic acid sequence encoding the protein or a vector comprising said nucleic acid molecule into a cell host,
- culturing said cell host under conditions allowing production of the protein, and
- isolating the protein.

19. (Previously Presented) A method for expressing a protein according to claim 1 comprising:

- transferring a nucleic acid molecule comprising a nucleic acid sequence encoding the protein or a vector comprising said nucleic acid molecule into a cell host, and
- culturing said cell host under conditions allowing production of the protein.

20. (Previously Presented) The method according to claim 18, wherein the cell host is a bacteria or a eukaryote cell selected from the group consisting of yeasts, mammal cells, plant cells and insect cells.

21. (Previously Presented) A transformed cell expressing the mammalian neuronal cationic ASIC channels obtained by the method according to claim 18.

22. (Currently Amended) A method for screening a substance capable of modulating activity of mammalian neuronal cationic ASIC channels, comprising:

measuring the current of said mammalian neuronal cationic ASIC channel prior to contacting said substance with ~~said cells~~ according to claim 21;

contacting variable quantities of a substance to be tested with the cells ~~according to claim 21~~;

measuring changes in current caused by the substance on said mammalian neuronal cationic ASIC channels; and

determining that the substance is capable of modulating activity of the mammalian neuronal cationic channels if the current is different ~~then~~ than current measured prior to contacting said substance with said cells.

23. (Previously Presented) The method according to claim 22, wherein said substance is capable of modulating the perception of acidity and affect nociception and taste transduction.

24.-25. (Canceled).

26. (Previously Presented) The method according to claim 19, wherein the cell host is either a prokaryote or an eukaryote selected from the group consisting of bacteria, yeasts, mammals, plants and insects.

27. (Previously Presented) A transformed cell expressing the mammalian neuronal amiloride-sensitive proton-activated cationic ASIC channels obtained by the method of claim 19.

28. (Currently Amended) A method for screening substances that are capable of modulating activity of mammals neuronal cationic channels, comprising:

measuring the current of said mammalian neuronal cationic ASIC channel prior to contacting said substance with ~~said cells~~ according to claim 27;

contacting variable quantities of a substance to be tested with the cells ~~according to claim~~
27;

measuring changes in current caused by the substance on said mammalian neuronal
cationic ASIC channels; and

determining that the substance is capable of modulating activity of the mammalian
neuronal cationic channels if the current is different ~~then~~ than current measured prior to
contacting said substance with said cells.

29. (Previously Presented) The method according to claim 28, wherein said substance is
capable of modulating the perception of acidity and affect nociception and taste transduction.